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Hepatitis B
Rotavirus
Diphtheria
Tetanus
Pertussis
Haemophilus influenzae type b
Pneumococcal Disease
Polio
Influenza
Measles
Mumps
Rubella
Varicella
Hepatitis A
Meningococcal Disease
Human Papillomavirus
Herpes Zoster

Vaccine-Preventable Diseases

Photos and descriptions of vaccines & vaccine-preventable diseases

Indiana State Department of Health

Vaccine Preventable Disease

Photos obtained from
the Centers for Disease Control & Prevention
and the Immunization Action Coalition

2010-2011 School Year

School Entry Immunization Requirements

Below are the number of doses and each vaccine required for school entry. Changes from the 2009-2010 requirements are indicated in **bold**.

Additional immunizations are recommended by the CDC for your child's safety, but are currently not required for school entry.

3 to 5 years old	3 Hep B (Hepatitis B) 4 DTaP (Diphtheria, Tetanus & Pertussis) 3 Polio (Inactivated Polio) 1 MMR (Measles, Mumps & Rubella) **2 Varicella**	
Kindergarten	3 Hep B 5 DTaP 4 Polio*	2 MMR **2 Varicella**
Grades 1 to 5	3 Hep B 5 DTaP 4 Polio	2 MMR 1 Varicella
Grades 6 to 12	3 Hep B 5 DTaP 4 Polio	2 MMR **2 Varicella** **1 Tdap (Tetanus & Pertussis)** **1 MCV (Meningococcal)**

Hep B Two dose alternative adolescent schedule (Recombivax HB® given at age 11-15 years x 2 doses) is acceptable if properly documented.

DTaP Four doses of DTaP/DTP/DT are acceptable if 4th dose was administered on or after child's fourth birthday.

Polio Three doses of polio vaccine are acceptable if 3rd dose was administered on or after child's fourth birthday and the doses are all IPV or all OPV.

*The 4th dose of polio vaccine **must** be administered on or after child's fourth birthday. This applies only to kindergarten for 2010-2011.

MMR If given as single antigen, 2 Measles, 2 Mumps and 1 Rubella required. Single antigen formulations have not been available in the US since Oct 2009.

Varicella Physician documentation of disease history, including month and year, is proof of immunity for children entering preschool, kindergarten and 1st grade. A signed statement from the parent/guardian indicating history of disease, including month and year is required for children in grades 2-12.

Tdap A Tdap booster can be given as early as 1 year after a Td vaccination.

For children who have delayed immunizations, please refer to the 2010 CDC "Catch-up Immunization Schedule" to determine adequately immunizing doses. All minimum intervals and ages for each vaccination as specified per 2010 CDC guidelines must be met for a dose to be valid. A copy of these guidelines can be found at www.cdc.gov/vaccines/recs/schedules/default.htm.

2010 Recommended
Child & Adolescent Immunization Schedule

Below is a guide to the CDC recommended ages for all childhood immunizations. For more information regarding immunizations, combination vaccines and the minimum time between immunizations, please talk to your health care provider.

Birth	Hep B (Hepatitis B)
2 months	Hep B RV (Rotavirus) DTaP (Diphtheria, Tetanus & Pertussis) Hib (Haemophilus influenza B) PCV (Pneumococcal) Polio (Inactivated Polio)
4 months	RV PCV DTaP Polio Hib
6 months	Hep B PCV RV (If Indicated) DTaP Polio Hib
12 months	PCV Varicella MMR (Measles, Mumps & Rubella) Hep A (Hepatitis A)
15 to 18 months	DTaP Hib Hep A (at 18 months)
4 to 6 years	DTaP Polio (4th dose no earlier than age 4) MMR Varicella
7 to 10 years	*Catch Up Immunizations*
11 to 18 years	Tdap (Tetanus, Diphtheria & Pertussis) HPV (Human Papillomavirus, 3 doses) MCV (Meningococcal)

Annual Flu
Recommended every Fall for children 6 months to 18 years (Children 6 months to 8 years of age need 2 doses the first time receiving the flu vaccine.)

Why Immunize?

Immunizing is one of the most effective means for controlling the spread of infectious diseases

Will protect the child not just during childhood, but for the rest of his/her life in most cases

Basics of Immunity

Active Immunity

Occurs when a person's own body produces an immune response to fight disease

The antibodies produced remain in the body's memory and can fight off future exposures to that disease

Passive Immunity

"Ready-made" immunity

Comes from an outside source

Always temporary—will wane within weeks to months

Hepatitis B

Description

Disease of the liver caused by hepatitis B virus

Transmission

Spread through contact with the blood and/or bodily fluids of an infected person

- Using dirty needles
- Tattooing and body piercing
- Mother to baby during childbirth
- Sexual Contact
- Sharing personal hygiene items

Time Between Infection and Symptoms

Between 6 weeks and 6 months (May have no symptoms)

Symptoms

Yellow skin or eyes
Tiredness
Stomach ache
Loss of appetite
Nausea
Joint pain

Complications

Chronic carrier
Cirrhosis; Liver failure; Liver cancer
Death

If infected as a baby or young child, there is a greater chance of becoming a lifetime Hepatitis B carrier, which can result in spreading the disease to others and/or becoming ill with chronic hepatitis, cirrhosis, liver failure, or hepatocellular carcinoma

Vaccine Available

Hep B (Hepatitis B)

Recommended Schedule for Vaccination

3 Dose Series
Recommended at Birth, 2 months, and 6-18 months of age

Photos of Herpes Zoster

Child with a history of leukemia presented with a maculopapular rash, which was diagnosed as a herpes-zoster outbreak due to the varicella-zoster virus (VZV) pathogen.

Herpes zoster (shingles)

Herpes Zoster (Shingles)

Description

Viral disease

Transmission

Reactivation of the varicella virus

Not spread through sneezing, coughing or casual contact

Time Between Infection and Symptoms

Can occur years or decades after illness with varicella

Symptoms

Pain, itching or tingling of the skin followed by a painful skin rash of blister-like lesions

Complications

Extreme pain

Very rare complications

- Pneumonia
- Hearing problems
- Blindness
- Brain inflammation (encephalitis)
- Death

Vaccines Available

Zoster

Recommended Schedule for Vaccination

1 Dose

Recommended at 60 years of age or older

Photos of Hepatitis B

This female Cambodian patient presented with a distended abdomen due to a hepatoma resulting from chronic hepatitis B infection.

Rotavirus

Description

Viral infection

Transmission

Spread through fecal-oral route
Can be infectious for up to 21 days

Time Between Infection and Symptoms

Between 2 to 4 days

Symptoms

Vomiting
Watery diarrhea for 3 - 8 days
Fever
Abdominal pain
Most common cause of severe diarrhea among children

Complications

Dehydration and Death

Vaccine Available

RV1 (Rotavirus, monovalent)

RV5 (Rotavirus, pentavalent)

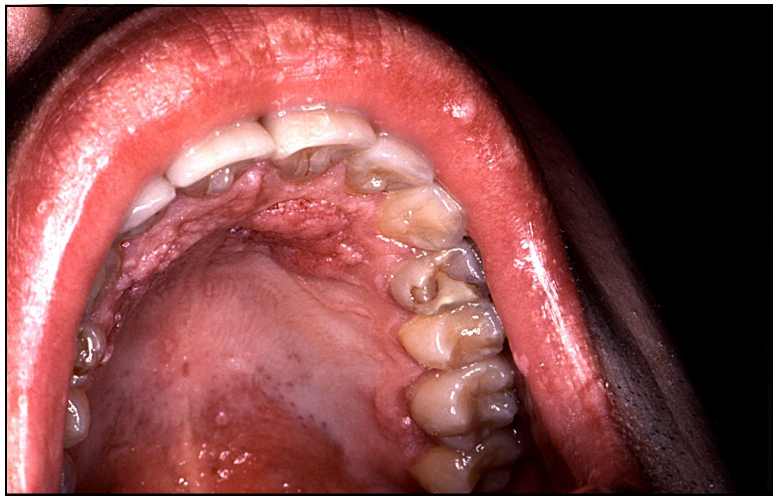
Recommended Schedule for Vaccination

RV1
2 Dose Series
Recommended at 2 and 4 months

RV5
3 Dose Series
Recommended at 2, 4, and 6 months

Series must be completed by 8 months 0 days

Photos of HPV



This HIV-positive patient was exhibiting signs of a secondary condyloma acuminata infection, i.e., venereal warts (This intraoral eruption of condyloma acuminata, or venereal warts was caused by the human papilloma virus).

Human Papillomavirus (HPV)

Description

Viral infection
More than 100 types of virus

Transmission

Spread through genital contact

Time Between Infection and Symptoms

Warts may appear within weeks or months, or not at all
Most people do not develop symptoms of HPV

Symptoms

Genital warts
Abnormal Pap smear

Complications

Cancer of the cervix, vulva, vagina, anus or penis
Oral cancer
Pre-cancerous lesions

Vaccines Available

Bivalent HPV (Types 16 and 18) for females only
Quadrivalent HPV (Types 6, 11, 16, and 18) for females and males

Recommended Schedule for Vaccination

Recommended at 11-12 years of age

Bivalent HPV

3 Doses Series, Recommended at 11-12 years of age
2nd dose 1 months after 1st dose
3rd dose 6 months after 1st dose

Quadrivalent HPV

3 Doses Series, Recommended at 11-12 years of age
2nd dose 2 months after 1st dose
3rd dose 6 months after 1st dose

Photos of Rotavirus

Child hospitalized with severe diarrhea from rotavirus infection

Child hospitalized from rotavirus infection

Diphtheria

Description

Respiratory disease caused by bacteria

Transmission

Spread by coughing and sneezing

Time Between Infection and Symptoms

Between 2 to 5 days

Symptoms

Gradual onset of sore throat
Low-grade fever

Complications

Airway obstruction
Death

Vaccines Available

DTaP (Diphtheria, Tetanus and acellular Pertussis)
DT (Diphtheria and Tetanus)
Tdap (Tetanus, Diphtheria and acellular Pertussis)
Td (Tetanus and Diphtheria)

Recommended Schedule for Vaccination

DTaP or DT
5 Dose Series
Recommended at 2, 4, 6, 15-18 months and 4-6 years

Tdap/Td
Booster dose
1 Booster Dose should be Tdap
Recommended at 11-12 years and every 10 years after

Photos of Meningococcal

Child has meningococcal disease and lost several fingers and toes

Meningococcemia on the lower extremities

Meningococcal

Description

Bacterial infection

Transmission

Spread by direct contact with large droplet respiratory secretions (coughing, sneezing, kissing, mouth-to-mouth resuscitation)

Time Between Infection and Symptoms

Between a few hours or 1-2 days

Symptoms

Sudden onset of fever
Headache
Stiff neck
Nausea
Vomiting
Photophobia
Altered mental status

Complications

Pneumonia
Arthritis
Otitis media
Epiglottitis
Sepsis
Permanent sequelae
Death

Vaccine Available

MCV (Meningococcal conjugate vaccine)
MPSV (Meningococcal polysaccharide vaccine)

Recommended Schedule for Vaccination

1 Dose Series
Recommended at 11-12 years of age

Photos of Diphtheria

10-year-old child with severe diphtheria

Child has diphtheria, thick gray coating over back of throat

Tetanus

Description

Nervous system disease caused by bacteria

Transmission

Enters the body through a break in the skin

Time Between Infection and Symptoms

Between 3 days to 3 weeks

Symptoms

Stiff muscles in jaw & neck
Difficulty swallowing
Painful muscle spasms and muscle rigidity

Complications

Severe muscle spasms
Fractures of the long bones
Aspiration pneumonia
Hypertension
Death

Vaccines Available

DTaP (Diphtheria, Tetanus and acellular Pertussis)
Tdap (Tetanus, Diphtheria and acellular Pertussis)
Td (Tetanus and Diphtheria)

Recommended Schedule for Vaccination

DTaP
5 Dose Series
Recommended at 2, 4, 6, 15-18 months and 4-6 years

Tdap/Td
Booster dose
1 Booster Dose should be Tdap
Recommended at 11-12 years and every 10 years after

Photos of Varicella

Child with varicella lesions on the palate

Adolescent female with varicella lesions in various stages

Varicella

Description

Highly Contagious Viral disease
Also known as Chicken Pox

Transmission

Spread through coughing and sneezing

Contact with skin lesions

Time Between Infection and Symptoms

Between 10 to 21 days

Symptoms

Itchy skin rash of a few or hundreds of lesions
Fever
Sore Throat
Usually more severe in older children (13 or older) and adults

Complications

Bacterial infection of the skin
Scarring
Swelling of the brain
Pneumonia
Death

Vaccine Available

Varicella

Recommended Schedule for Vaccination

2 Dose Series
Recommended at 12-15 months and 4-6 years of age

Photos of Tetanus

This neonate is displaying a bodily rigidity produced by *Clostridium tetani* exotoxin, called “neonatal tetanus”.

Child has painful muscle contractions from tetanus

Pertussis

Description

Highly contagious respiratory disease caused by bacteria
Also known as Whooping Cough

Transmission

Spread by coughing and sneezing

Time Between Infection and Symptoms

Between 5 to 10 days

Symptoms

Difficulty breathing
Long bursts of coughing (whoop)
Vomiting
Exhaustion

Complications

Pneumonia
Seizures
Encephalopathy
Death

Vaccines Available

DTaP (Diphtheria, Tetanus, and acellular Pertussis)
Tdap (Tetanus, Diphtheria and acellular Pertussis)

Recommended Schedule for Vaccination

DTaP
5 Dose Series
Recommended at 2, 4, 6, 15-18 months and 4-6 years

Tdap
Booster dose
1 Booster Dose should be Tdap
Recommended at 11-12 years and every 10 years after

Photos of Hepatitis A

The viral disease *Hepatitis A* is manifested here as icterus, or jaundice of the conjunctivae and facial skin.

Hepatitis A

Description

Disease of the liver caused by hepatitis A virus

Transmission

Spread by the fecal-oral route
Less often, the virus is spread by swallowing food or water that contains the virus

Time Between Infection and Symptoms

Between 3 to 4 weeks

Symptoms

Nausea
Abdominal pain
Jaundice (Yellow skin and eyes)
Dark Urine

Young children may not have symptoms

Complications

Low energy levels for up to a year
Hospitalization
Death (More common when liver disease already exists)

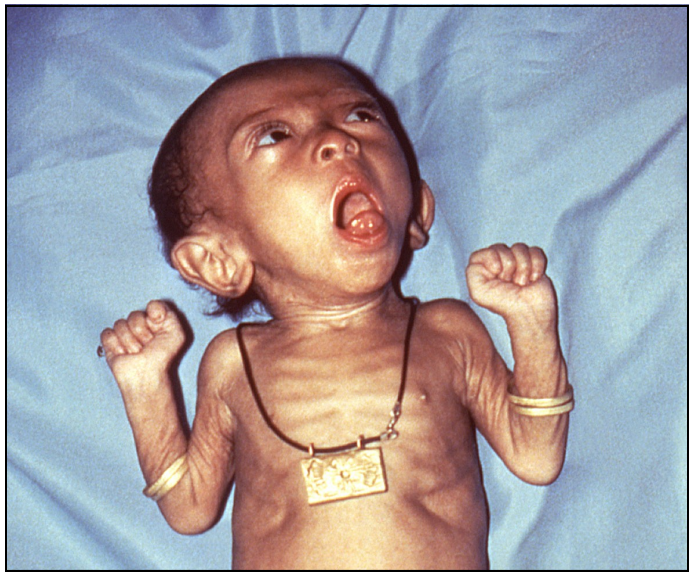
Vaccine Available

Hep A (Hepatitis A)

Recommended Schedule for Vaccination

2 Dose Series
Recommended between 12-23 months, separated by at least 6 months

Photos of Pertussis



This image depicts a female infant who presented to a clinic suffering from what was diagnosed as pertussis.

Child has pertussis.
Difficult for him to stop coughing and to get air

Haemophilus influenzae type b (Hib)

Description

Bacterial infection

Transmission

Spread by coughing and sneezing

Time Between Infection and Symptoms

Unknown

Symptoms

High fever
Severe headache
Sore throat
Breathing problems

Complications

Meningitis
Pneumonia
Sepsis
Arthritis
Skin and throat infections

One out of 20 children who get Hib meningitis will die

10 to 30% of survivors will have permanent brain damage

Vaccines Available

Hib (*Haemophilus influenza* type b)

Recommended Schedule for Vaccination

4 Doses Series
Recommended at 2, 4, 6 and 12-15 months of age
Not routinely given after 5 years of age

Photos of Rubella

This infant presented with "blueberry muffin" skin lesions indicative of congenital rubella.

The young boy pictured here, displayed the characteristic maculopapular rash indicative of rubella, otherwise known as German measles, or 3-day measles.

Rubella

Description

Viral disease

Also known as the German Measles

Transmission

Spread through coughing and sneezing

Time Between Infection and Symptoms

Between 12-23 days

Symptoms

Mild rash and fever

Complications

Infected before birth

- Deafness
- Cataracts or Blindness
- Heart defects
- Mental retardation

Infected while pregnant

- Miscarriage
- Premature birth
- Infection passed to fetus

Vaccines Available

MMR (Measles, Mumps and Rubella)

Recommended Schedule for Vaccination

2 Dose Series

Recommended at 12-15 months and 4-6 years of age

Photos of Hib

Child has swollen face due to Hib infection

Infant with severe vasculitis with disseminated intravascular coagulation (DIC) with gangrene of the hand secondary to Hib septicemia

Pneumococcal

Description

Bacterial infection

Transmission

Spread by coughing and sneezing

Time Between Infection and Symptoms

Between 1 to 3 days

Symptoms

High fever
Cough
Breathing problems

Complications

Ear infections
Pneumonia Bacteremia
Meningitis
Death

Infections difficult to treat due to antibiotic resistance

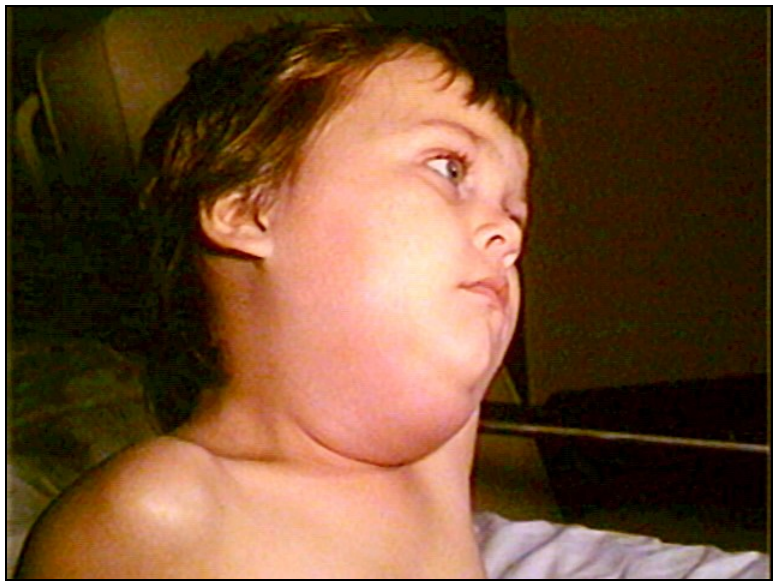
Vaccines Available

PCV (Pneumococcal conjugate vaccine)
PPSV (Pneumococcal polysaccharide vaccine)

Recommended Schedule for Vaccination

4 Doses Series
Recommended at 2, 4, 6 and 12-15 months of age
Not routinely given after 5 years of age

Photos of Mumps



Child very swollen under the jaw and in the cheeks due to mumps

This is a photograph of a patient with bilateral swelling in his submaxillary regions due to mumps.

Mumps

Description

Viral disease of the salivary glands

Transmission

Spread through coughing and sneezing

Time Between Infection and Symptoms

Between 14 to 18 days

Symptoms

Fever
Anorexia
Malaise
Headache
Muscle pain
Swelling of salivary glands

Complications

Meningitis
Inflammation of the testicles or ovaries
Inflammation of the pancreas
Deafness, usually permanent

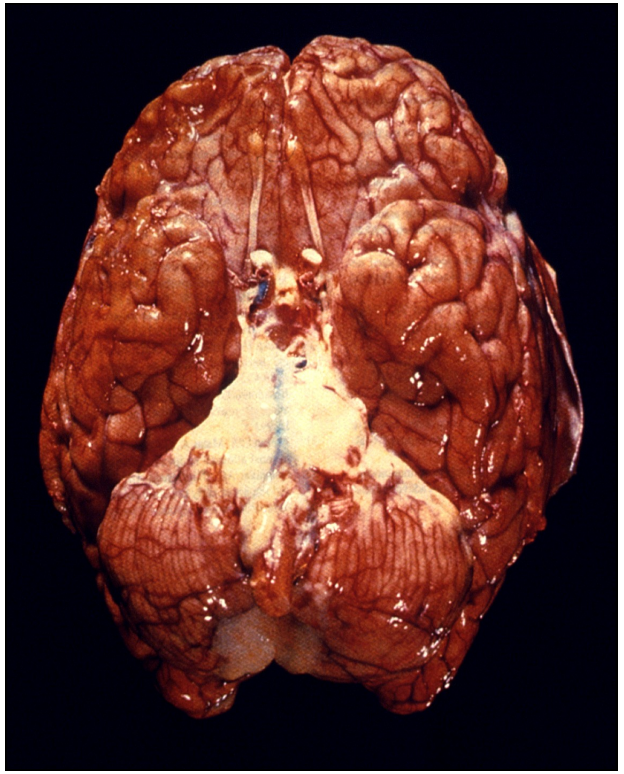
Vaccines Available

MMR (Measles, Mumps and Rubella)

Recommended Schedule for Vaccination

2 Dose Series
Recommended at 12-15 months and 4-6 years of age

Photos of Pneumococcal



This ventral view of a human brain depicts a purulent basilar meningitis infection due to Streptococcus pneumoniae bacteria.

Polio

Description

Highly infectious disease caused by a virus that invades the nervous system

Transmission

Spread by contact with an infected person

Time Between Infection and Symptoms

Between 6 to 20 days
Up to 95% are asymptomatic

Symptoms

Fever
Sore throat
Nausea
Headaches
Stomach aches
May also cause stiffness in the neck, back and legs

Complications

Paralysis
Respiratory failure
Deformities of extremities that can lead to permanent disability
Death

Vaccine Available

IPV (Inactivated Polio Vaccine)

Recommended Schedule for Vaccination

4 Dose Series
Recommended at 2, 4, 6-18 months and 4-6 years of age

Final dose of series **must** be given after 4 years of age and at least 6 months after previous dose

Photos of Measles

This child with measles is displaying the characteristic red blotchy pattern on his body during third day of the rash.

Head and shoulders of boy with measles.

Measles

Description

Highly contagious respiratory disease caused by a virus

Transmission

Spread by contact with an infected person, through coughing and sneezing

Time Between Infection and Symptoms

Between 10 to 14 days

Symptoms

Rash begins at head and spreads downward over entire body
Cough
Conjunctivitis
High Fever
Malaise
Koplik spots

Complications

Pneumonia
Encephalitis
Seizures
Death

Vaccines Available

MMR (Measles, Mumps and Rubella)

Recommended Schedule for Vaccination

2 Dose Series
Recommended at 12-15 months and 4-6 years of age

Photos of Polio

Cheshire Home for Handicapped Children, Freetown, Sierra Leone

Child with a severely deformed leg due to polio

Influenza

Description

Viral infection

Transmission

Spread through coughing and sneezing

Time Between Infection and Symptoms

Between 1 to 4 days

Symptoms

Fever (usually high)
Headache
Extreme tiredness
Dry cough
Sore throat
Runny or stuffy nose
Muscle aches

Complications

Pneumonia
Reye Syndrome
Myocarditis
Death (Most frequent cause of death from a VPD)

Vaccines Available

TIV (Trivalent Influenza Vaccine)
LAIV (Live Attenuated Influenza Vaccine)

Recommended Schedule for Vaccination

TIV

1 Dose each year
Can be given as early as 6 months of age

LAIV

1 Dose each year
Can be given as early as 2 years of age; Up to 49 years of age

Photos of Influenza

This 2009 photograph captured a sneeze in progress, revealing the plume of salivary droplets as they are expelled in a large cone-shaped array from this man's open mouth, thereby, dramatically illustrating the reason one needs to cover his/her mouth when coughing, or sneezing, in order to protect others from germ exposure.